

WHAT IS CLAIMED IS:

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1. A data storage subsystem comprising:
a plurality of storage devices;
a storage controller coupled to said plurality of storage devices, wherein said
storage controller is configured to store data in the form of stripes where
each stripe includes a plurality of data blocks stored across said plurality
of storage devices, and wherein block verification information is
associated with each of said plurality of data blocks;
10 wherein said storage controller is further configured to initialize a given stripe in
response to detecting a mismatch in said block verification information
associated with at least one data block of said given stripe.
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2. The data storage subsystem as recited in Claim 1 wherein said plurality of data
blocks of each stripe includes a redundancy data block containing redundant data
calculated with dependence upon other data blocks of said each stripe.
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3. The data storage subsystem as recited in Claim 2 wherein said redundancy data
block contains parity data calculated from said other data blocks.
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4. The data storage subsystem as recited in Claim 2 wherein said block verification
information associated with a particular data block includes a code dependent
upon data contained within said particular data block.
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5. The data storage subsystem as recited in Claim 4 wherein said code is an error
detection code.
6. The data storage subsystem as recited in Claim 5 wherein said error detection
code is a cyclic redundancy check code.

7. The data storage subsystem as recited in Claim 5 wherein said storage controller is configured to detect a mismatch in said block verification information by comparing a value contained in a field of said particular data block for storing said error detection code to a recomputed error detection code computed from data within said particular data block read from one of said storage devices.

8. The data storage subsystem as recited in Claim 2 wherein said block verification information associated with a particular data block includes an address associated with said particular data block.

9. The data storage subsystem as recited in Claim 8 wherein said address is a logical block address for said particular block.

10. The data storage subsystem as recited in Claim 9 wherein said storage controller is configured to detect a mismatch in said block verification information by comparing a value contained in a field of said particular data block for storing said logical block address to an expected value of said logical block address for said particular data block read from one of said storage devices.

11. The data storage subsystem as recited in Claim 8 wherein said block verification information of said particular data block further includes a code dependent upon data contained within said particular data block.

12. The data storage subsystem as recited in Claim 11 wherein said code is an error detection code.

13. The data storage subsystem as recited in Claim 12 wherein said error detection code is a cyclic redundancy check code.

14. The data storage subsystem as recited in Claim 1 wherein each of said plurality of storage devices is a disk drive.
15. The data storage subsystem of Claim 1 wherein said block verification
5 information includes a block ID.
16. The data storage subsystem of Claim 1 wherein said storage controller is configured to implement RAID 5 functionality.
- 10 17. A data storage subsystem comprising:
a plurality of storage devices;
a storage controller coupled to said plurality of storage devices, wherein said
storage controller is configured to store data in the form of stripes where
each stripe includes a plurality of data blocks stored across said plurality
15 of storage devices, and wherein each data block includes block verification
information;
wherein said storage controller is further configured to initialize a given stripe in
response to detecting a mismatch in said block verification information in
at least two data blocks of said given stripe.
- 20 18. The data storage subsystem as recited in Claim 17 wherein said plurality of data
blocks of each stripe includes a redundancy data block containing redundant data
calculated with dependence upon other data blocks of said each stripe.
- 25 19. The data storage subsystem as recited in Claim 18 wherein said redundancy data
block contains parity data calculated from said other data blocks.
20. The data storage subsystem as recited in Claim 18 wherein said block verification
information of a particular data block includes a code dependent upon data
30 contained within said particular data block.

21. The data storage subsystem as recited in Claim 20 wherein said code is an error detection code.
- 5 22. The data storage subsystem as recited in Claim 21 wherein said error detection code is a cyclic redundancy check code.
23. The data storage subsystem as recited in Claim 21 wherein said storage controller is configured to detect a mismatch in said block verification information by
10 comparing a value contained in a field of said particular data block for storing said error detection code to a recomputed error detection code computed from data within said particular data block read from one of said storage devices.
24. The data storage subsystem as recited in Claim 18 wherein said block verification
15 information of a particular data block includes an address associated with said particular data block.
25. The data storage subsystem as recited in Claim 24 wherein said address is a logical block address for said particular block.
- 20 26. The data storage subsystem as recited in Claim 25 wherein said storage controller is configured to detect a mismatch in said block verification information by comparing a value contained in a field of said particular data block for storing said logical block address to an expected value of said logical block address for said
25 particular data block read from one of said storage devices.
- ✓ 27. A computer system comprising:
a host; and
a data storage subsystem coupled to said host, said data storage subsystem
30 including:

a plurality of storage devices;

a storage controller coupled to said plurality of storage devices, wherein
said storage controller is configured to store data in the form of
stripes where each stripe includes a plurality of data blocks stored
5 across said plurality of storage devices, and wherein block
verification information is associated with each of said plurality of
data blocks;

wherein said storage controller is further configured to initialize a given
stripe in response to detecting a mismatch in said block verification
10 information associated with at least one data block of said given
stripe.

28. The computer system as recited in Claim 27 wherein said plurality of data blocks
of each stripe includes a redundancy data block containing redundant data
15 calculated with dependence upon other data blocks of said each stripe.

29. The computer system as recited in Claim 28 wherein said redundancy data block
contains parity data calculated from said other data blocks.

20 30. The computer system as recited in Claim 28 wherein said block verification
information associated with a particular data block includes an error detection
code.

31. The computer system as recited in Claim 30 wherein said block verification
25 information of a particular data block further comprises an address associated
with said particular data block.

32 A method of operating a data storage subsystem comprising:

storing data in the form of stripes within a plurality of storage devices, where each stripe includes a plurality of data blocks stored across said plurality of storage devices, and wherein block verification information is associated with each of said plurality of data blocks; and

initializing a given stripe in response to detecting a mismatch in said block verification information associated with at least one data block of said given stripe.

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- 10 33. The method as recited in Claim 32 wherein said plurality of data blocks of each stripe includes a redundancy data block containing redundant data calculated with dependence upon other data blocks of said each stripe.
- 15 34. The method as recited in Claim 33 wherein said redundancy data block contains parity data calculated from said other data blocks.
35. The method as recited in Claim 33 wherein said block verification information of a particular data block includes an error detection code.
- 20 36. The method as recited in Claim 35 wherein said block verification information associated with said particular data block further includes an address associated with said particular data block.
- 25 37. The method as recited in Claim 33 wherein said block verification information associated with a particular data block includes an address associated with said particular data block.
- 30 38. The method as recited in Claim 35 wherein said detecting said mismatch in said block verification information comprises comparing a value contained in a field of said particular data block for storing said error detection code to a recomputed

error detection code computed from data within said particular data block read from one of said storage devices.

39. The method as recited in Claim 37 wherein said detecting said mismatch in said block verification information comprises comparing a value contained in a field of said particular data block for storing said address to an expected value of said address for said particular data block read from one of said storage devices.

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11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100